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IMMOBILIZATION OF ALBUMIN AND GLUCOSE OXIDASE ONTO RADIATION GRAFTED POLYMERIC SUBSTRATES

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Radiation methods are particularly suited for the production of a large variety of graft copolymers with functional groups which can be used for the chemical attachment of biomolecules, In order to prepare biomaterials for clinical and biological uses we have been studied the protein immobilization onto polymers as polyethylene (PE) and natural rubber (NR). The grafted copolymers with carboxilic groups were obtained with the irradiation of PE and NR films in a solution of acrylic acid/water (30% v/v) with gamma rays of a ^{60}Co source. The chemical activation of PE-g-AAc films (2x2 cm) were initially carried out by a methylation procedure. After transfering the films to a 1% solution of hydrazine for 12-15 hs at 20º C, the azide formation was accomphished by immersing the films in a mixture of 0.5 M $NaNO_2$ and 0.3 N HCl. The activated films of PE-g-AAc were dipped overnight into a BSA solution of TRIS buffer, pH 8.8 (0.3 mg/ml) at 0º C. The coupling yield of BSA on the graft copolymer was 0.3 mg/cm^2 of solid support. The activation of NR-g-AAc was achieved using CMC. The copolymer films were added to 10 ml of buffer solution containing 40 mg of carbodiimide and 40 mg of glucose oxidase for 15 hours. The enzyme activity on the polymeric substrate was 10 U/cm^2. The irradiated grafted surfaces with carboxilic groups showed to a good support for the immobilization of proteins,

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